

On the presence of *Heterocarpus ensifer* Milne Edwards, 1881 (Decapoda, Pandalidae) in the Spanish Mediterranean

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Heterocarpus ensifer Milne Edwards, 1881, is a benthic deepwater species with a mid-latitude circumglobal distribution extending throughout the eastern and western Atlantic, Indo-west Pacific and Indian Ocean (Holthius, 1980). Its geographic distribution covers from the Indo-Pacific (occurring in the south-west Indian Ocean and possibly Hawaii and Kiribati; Crosnier 1988); the western Atlantic Ocean, from North Carolina to Brazil; and eastern Atlantic Ocean from the South-Western Iberian peninsula (Maurin, 1961, 1962; Ribeiro & Cascalho, 1987; Sardá *et al.*, 1982) to the Congo (5°42'S), including the archipelagos of Madeira, Canaries and Cape Verde (Crosnier & Forest, 1973; Holthius, 1980; Lagardere, 1981, Chace, 1985). In the Western Mediterranean, only one example has been recorded previously in Balearic waters (Massuti & Oliver, 1975; García Socías & Massuti, 1987), although we do not know of its deposit in any collection.

The appearance of new records of *Heterocarpus ensifer* in the Spanish Mediterranean, since this is only the second documented record of the species in the Mediterranean, provide data on the size, sex, localisation and depth of appearance of the species, thereby contributing to the understanding of its presence in the Mediterranean.

The material examined consisted of five specimens of *Heterocarpus ensifer* that came from catches obtained using sets of traps in the course of experimental fishing cruises, carried out in the months of November 1998, March and June 1999, covering the whole of the Spanish Mediterranean coast, including the Balearic Islands and the Alborán Island (García-Rodríguez *et al.*, 2000). The specimens of *Heterocarpus ensifer* found were

preserved frozen until they could be processed in the laboratory. They were measured by their cephalothoracic length (CL), to the nearest 0.1 millimetre, the individual weight (W) was recorded accurately to the nearest 0.1 gram, and the sex was recorded. The sex was determined by the presence or not of masculine appendages in the second pair of pleopods, by dissection under a stereoscopic microscope. A voucher specimen of those caught has been deposited in the Biological Reference Collections of the ICM-CSIC in Barcelona (Code: ICMD 100/2000).

The studied specimens shown a very wide distribution, appearing at the south of the island of Menorca (39°49.235'N; 03°46.661'E; 245 m; 25.2 mm CL, 7.9 g W) in November, the Columbretes Islands (40°10.102'N; 01°07.316'E; 306 m; no data) in February, La Mesa (Gata Cape; 36°35.426'N; 02°13.675'W; 339 m; 31.9 mm CL, 14.5 g W; 26.4 mm CL, 9.0 g W) in May, with two specimens on the same catch, and at El Seco de los Olivos (Almería; 36°32.891'N; 02°48.752'W; 364 m; 27.9 mm CL, 11.7 g W) in May. The water temperature at the findings was very homogeneous (12.5°-13.3°C), as would be expected at these depths, characterised by the presence of Levantine Intermediate Waters. All the obtained specimens were females and no one were ovigerous.

In its distribution area, excepting the Mediterranean, *H. ensifer* is a common species that occurs most abundantly in the depth range from 300 to 600 m (Clarke, 1972; Strhusaker & Aasted, 1974; Gooding, 1984; Gooding *et al.*, 1988; Dailey & Ralston, 1986). King (1981) reported depth ranges in the south western Pacific islands of 285-760 m. In addition, it has been recorded at 146-885 m

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(Indo-Pacific) and 200-885 in Atlantic (Chace 1985; Crosnier, 1988, respectively), and between 200 and 350 m in Palau (Saunders & Hastie, 1992). In the Canary Islands it is found at depths of 113-756 m (González *et al.*, 1992; González & Santana, 1996; López Abellán *et al.*, 1992); Sardá *et al.* (1982) found the species at 512 m deep at the Gulf of Cádiz. The species are mainly found on muddy bottoms, although they have been reported on sandy substrata from the Canary insular shelves and slopes (González *et al.*, 1990), as well as on bottom consisting of fine mud and hexantinellid sponges (González & Santana, 1996).

There is a very wide variation on the optimum depth and size ranges for *H. ensifer* in other areas, with sizes ranging from 6.5 to 42.0 mm CI (González & Santana, 1996; King, 1981; Saunders & Hastie, 1992). In our findings, *H. ensifer* appeared in the shallow zone of the optimum range, but was within the reported bathymetric distribution range. The sizes also appeared to be in the size ranges already observed. All of our findings were in the neighbourhood of islands (Menorca and Columbretes) or submarine rocky banks (Seco de los Olivos and La Mesa), usual fishing grounds for trap lowering. In the case of the Mediterranean first record of the species (Massutí & Oliver, 1975), a trawl gear was used; this fact contrasts with that along the eight year MEDITS_ES fishing trawl cruises covering the Spanish coast, *H. ensifer* was never caught (Carbonell & Abelló, 1998). On the other hand, *H. ensifer* is usually caught using traps as literature reflects, despite Sardá *et al.* (1982) caught twelve individual by trawling in the Gulf of Cádiz. The possibility that Massutí & Oliver (1975) made a misidentification with another Mediterranean species can be considered, since in 23 years no one has cited this species. Furthermore, the presence of *Heterocarpus grimaldii* Milne Edwards & Bouvier (1900) in the Gulf of Cádiz (García-Raso, 1996), a deeper species that can be easily confused with *H. ensifer*, adds uncertain to the matter. In any case, our opinion is that *H. ensifer* distribution in the Mediterranean can be wider than observed until now, due to its mid-latitude circumglobal distribution, and that it could be found more easily at depths below 400 m and, furthermore, in some areas neighbouring underwater seamounts and islands.

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